

1 Analysis tasks : Morphology of grain structure, quantitative element analysis and crystal structure identification on Zirconia bulk material.

| | |
|---------------------|---|
| Customer | Kerox Kft. H-2049 Diósd Homokbánya út 77. Hungary |
| Specimen trade name | Kerox Zirconia Blanks |
| Specimen parameters | Final sintered ceramic cylinders RD9820 LOT No. M107-05 |
| Measurements | Quantification, Phase detection, Grain analysis |

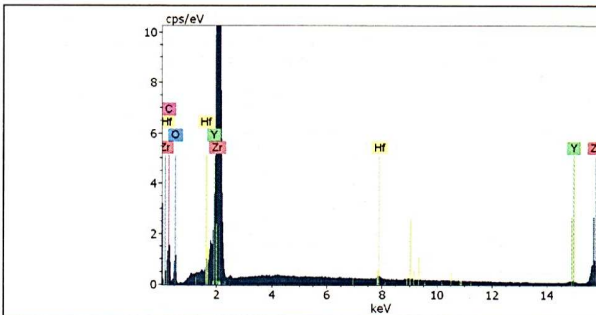
Applied Equipments: Hitachi S-4800 SEM with Bruker EDX system and Rigaku MiniFlexII Diffractometer.

Results of previous calibration on S-4800:

- Linear scale error of picture is less than 5% and distortion is less than 1%
 - EDX energy scale is fine-tuned, quantitative analysis works with relative error less than 5%.
- Rigaku Diffractometer calibration: in factory guaranteed term

Previous calibration date: 09.28. 2010.

2 EDX Quantification:

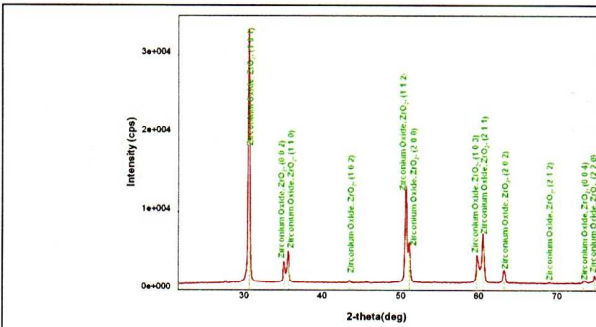


The final sintered material of Kerox Zirconia Blanks contains the following oxide components:

| Components | Mass percent |
|-------------------------------|--------------|
| ZrO ₂ | 93-94% |
| Y ₂ O ₃ | 4-5% |
| HfO ₂ | 1-2% |

EDX spectrum was detected by Bruker XFlash detector and analyzed by Esprit System attached to S-4800 Scanning Electron Microscope.

3 Phase detection:



Powder diffraction pattern of final sintered Kerox Zirconia Blanks showed perfect matching with tetragonal structure ZrO₂ phase recalled from 66787 data code of the ICSD Collection.

Measurements were carried out by Rigaku MiniFlexII Diffractometer.

4 Grain analysis:



Typical grains sizes of final sintered Kerox Zirconia blanks are between 0.2µm and 0,5µm (used Kerox recommended sintering condition).

The picture was recorded in S-4800 Hitachi Scanning Electron Microscope at 3kV excitation voltage using SE detector.

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